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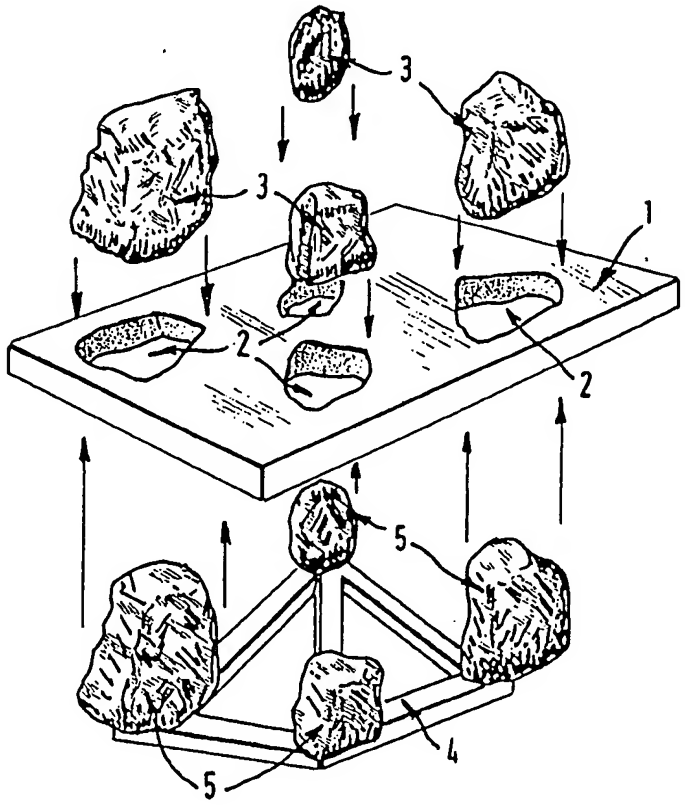
(54) Burner for gas fire

(57) A burner element comprising a plaque (1) through which a gas air mixture can pass to burn at or above the surface of the plaque (1) and, secured in holes (2) in the plaque (1), are pre-formed fuel-effect pieces of ceramic (3), the plaque (1) being in particular of a porous ceramic foam made by impregnating a polyurethane or other plastics foam with a ceramic slip or slurry and burning out the plastics foam.



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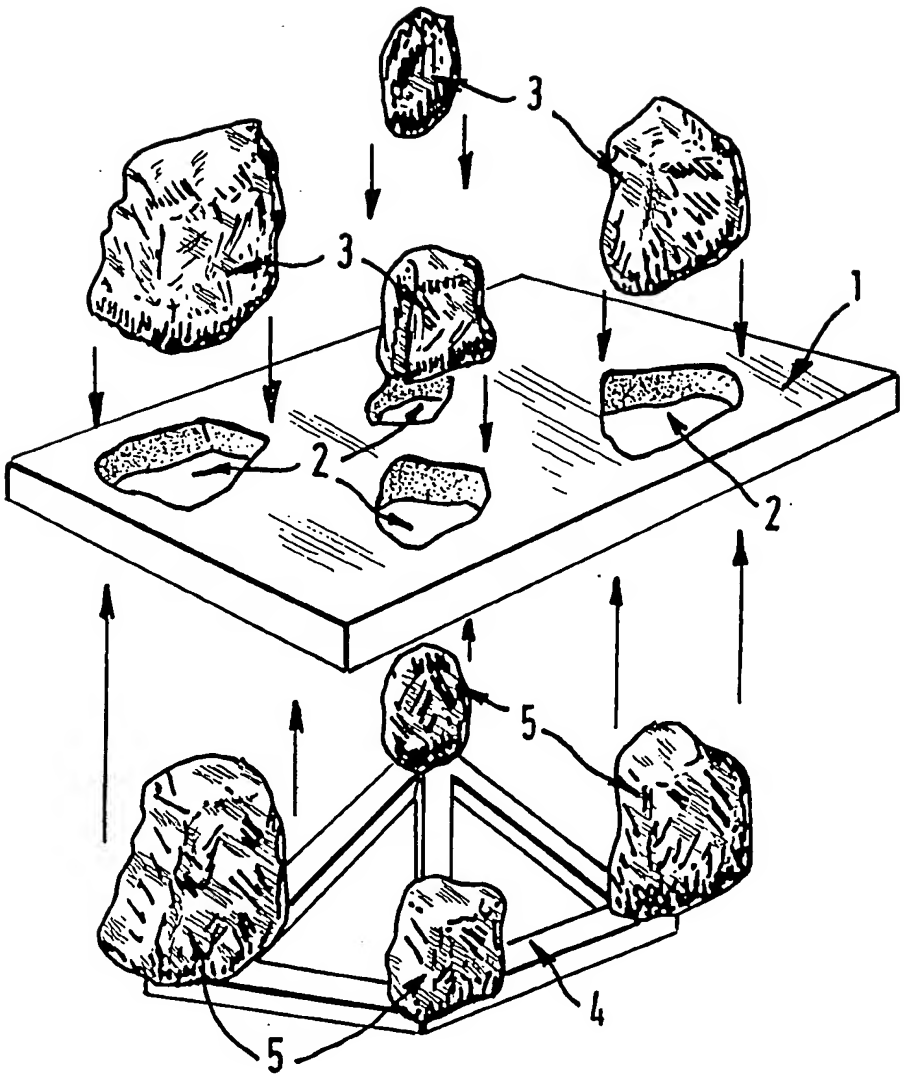
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SPECIFICATION

Burner for gas fire

The invention relates to burners for gas fires which in use have the appearance of fires burning solid fuels, e.g. logs of wood, coal or coke, and which are of the type achieving the desired effect by incorporating a plaque through which pass mixtures of air and gas to burn on or above the top surface of the plaque.

One form of plaque so used has been manufactured by cutting the fuel shapes in a block of plastics foam, e.g. polyurethane foam, impregnating the whole block with a ceramic slip or slurry, covering those parts of the block that are to appear as non-burning fuel with a slip or slurry of thicker consistency than covers the remainder of the block, applying colouring agents to the block, drying the block and then firing it so as to burn out the plastics foam. The consistency of the slip or slurry covering the parts representing non-burning fuel is selected to ensure that after firing these parts are rendered impervious to the air/gas mixture, whilst the consistency of the slip or slurry covering the remainder of the block is selected to form on firing a porous ceramic through which the mixture passes.

This method of manufacture is not only costly, but places limits on the designs of plaque that can be produced, and is not capable of being adapted to automated production.

The invention provides a burner not subject to these difficulties, comprising a plaque through which a gas air mixture can pass to burn at or above the surface of the plaque and, secured in holes in the plaque, pre-formed fuel-effect pieces of ceramic.

The plaque is conveniently of the type referred to above, produced and used for example as set out in PCT Application GB 83/00282 (published as Specification WO 84/01992) and wherein the advantages of the invention are chiefly shown. There is however no essential limitation to such plaques, filter cast plaques may also be used, made for example from the material described in U.K. Specification No. 1436842 and with the holes for the fuel effect ceramic pieces formed during the casting or afterwards.

The invention further provides a method of production of burners which method comprises the steps of forming holes in a flat or slightly contoured sheet of plastics foam to leave areas corresponding to those parts of the burner intended to represent burning areas of fuel or ash, forming shaped pieces of non-porous ceramic to fit the holes and to represent non-burning fuel, and then assembling these pieces in the holes, either before or after impregnation with ceramic slip or slurry but prior to firing or in the porous ceramic foam formed by firing the sheet after it has been impregnated.

The holes in the sheet of plastics foam, e.g. polyurethane foam, may be formed bu cutting with hot, shaped multiple knive[illegible] with cutting tools. After the forming operation the sheet will be impregnated with a ceramic slip or slurry, containing colouring agents if desired, such as pottery inglaze colours, and dried prior to firing to produce a porous ceramic foam element through which a gas/air mixture can pass.

The pieces representing non-burning fuel, themselves suitably coloured, may be of any conventional ceramic capable of withstanding the operating conditions. A suitable ceramic for example comprises China clay 40 weight %, ball clay 20%, fused silica 30%, bentonite 10%. Alternatively a vacuum cast component may for example be made up of ceramic fibre 67%, china clay 22%, boron phosphate 11.5%, and starch 0.5%. The ceramic fibre may for example be a fused and blown kaolin glass ceramic fibre rubbed through a 6 mesh sieve. As indicated above, the imitation fuel pieces may be placed in the formed holes as dried shaped but unfired pieces to be fired with the treated plastic foam, conveniently but not essentially before its impregnation, or coloured and fired before being placed in the holes, or mounted in the holes left after firing of the treated foam plastics, e.g. by means of an adhesive cement at the rear face of the plaque.

The pieces representing non-burning fuel may be joined together in a matrix, coloured and fired, the fired porous ceramic foam element being placed over the matrix and the joints between these being sealed, e.g. with a refractory or suitable soft refractory fibre material to prevent excessive gas leakage at the joints.

The accompanying sketch illustrates two possible methods of assembly.

The perforated plastics foam sheet 1 or ceramic foam plaque formed after firing has in it a number of irregular holes 2 either to receive individual pieces 3 representing non-burning fuel or to fit over a matrix comprising a reticulated base frame 4 having in one with it pieces 5 representing non-burning fuel.

The method of the invention has the advantage (1) that the amount of plastics foam required for each plaque is reduced, (2) that the relief height of the pieces representing non-burning fuel is not restricted by the thickness of a block of plastics foam as when the whole plaque is formed from a single block of plastics foam, and (3) that, since the depth of slip or slurry over the "burning" areas can be substantially uniform, the impregnating or covering step can be readily controlled, and (4) that the appearance of the fuel as to surface texture, colouration, provision of re-entrant or undercut surfaces is more easily chosen and produced. Further the fuel pieces may be of a fibre-containing ceramic.

The method also has the important advantage that it can be adapted to automated production.

CLAIMS

1. A burner element comprising a plaque through which a gas air mixture can pass to burn at or above the surface of the plaque and, secured

in holes in the plaque, pre-formed fuel-effect pieces of ceramic.

2. A burner element according to claim 1, wherein the plaque is of a porous ceramic foam made by impregnating a polyurethane or other plastics foam with a ceramic slip or slurry and burning out the plastics foam.

3. A burner element according to claim 2, wherein the fuel effect pieces are joined by a matrix lying at the rear of the element.

4. A method of production of a burner element which method comprises the steps of forming holes in a flat or slightly contoured sheet of plastics foam tc leave areas corresponding to those parts of the element intended to represent burning areas of fuel or ash, forming shaped pieces of non-porous ceramic to fit the hcles and to represent non-burning fuel, and then assembling these pieces in the holes, either before or after impregnation with ceramic slip or siurry but prior to firing, or in the porous ceramic foam formed by firing the sheet after such impregnation.

5. A method according to claim 4 where the pieces representing non-burning fuel are joined together in a matrix, coloured and fired, the fired porous ceramic foam being subsequently placed over the matrix and the joints between them sealed.

6. A method for producing a burner element for a gas fire substantially as hereinbefore described with reference to the accompanying drawing.

7. A burner element for a gas fire as produced by the method of any of claims 4 to 6.

8. A gas fire having a burner element according to any of claims 1 to 3 and 7.

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